

GLC 4400 Lubrication Controller

313855H
EN

For controlling and monitoring single-line resistive, parallel, series progressive and dual line, automatic lubrication systems. Not for use in explosive atmospheres!

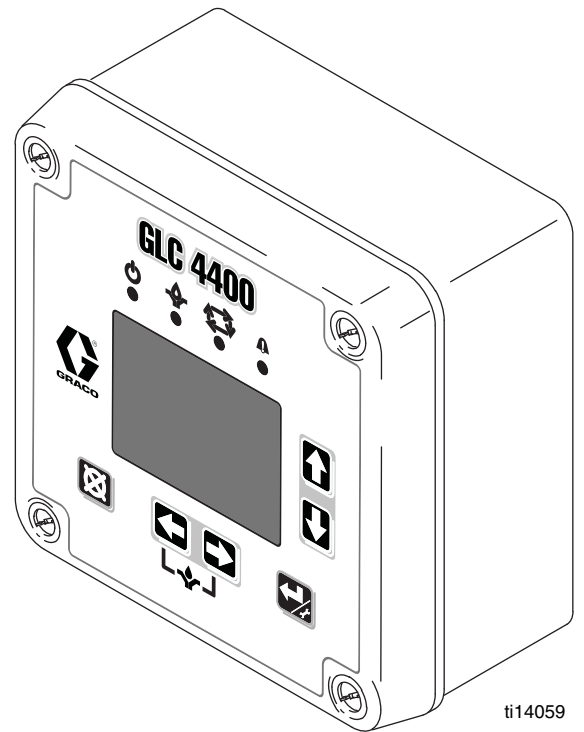
Part No.: 24B591, Series C: DC Power

Part No.: 24B596, Series C: AC Power






Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.



Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

 WARNING	
	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment. • Connect only to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local and national codes and regulations.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.

Component Identification

Keypad, Display, and Icons

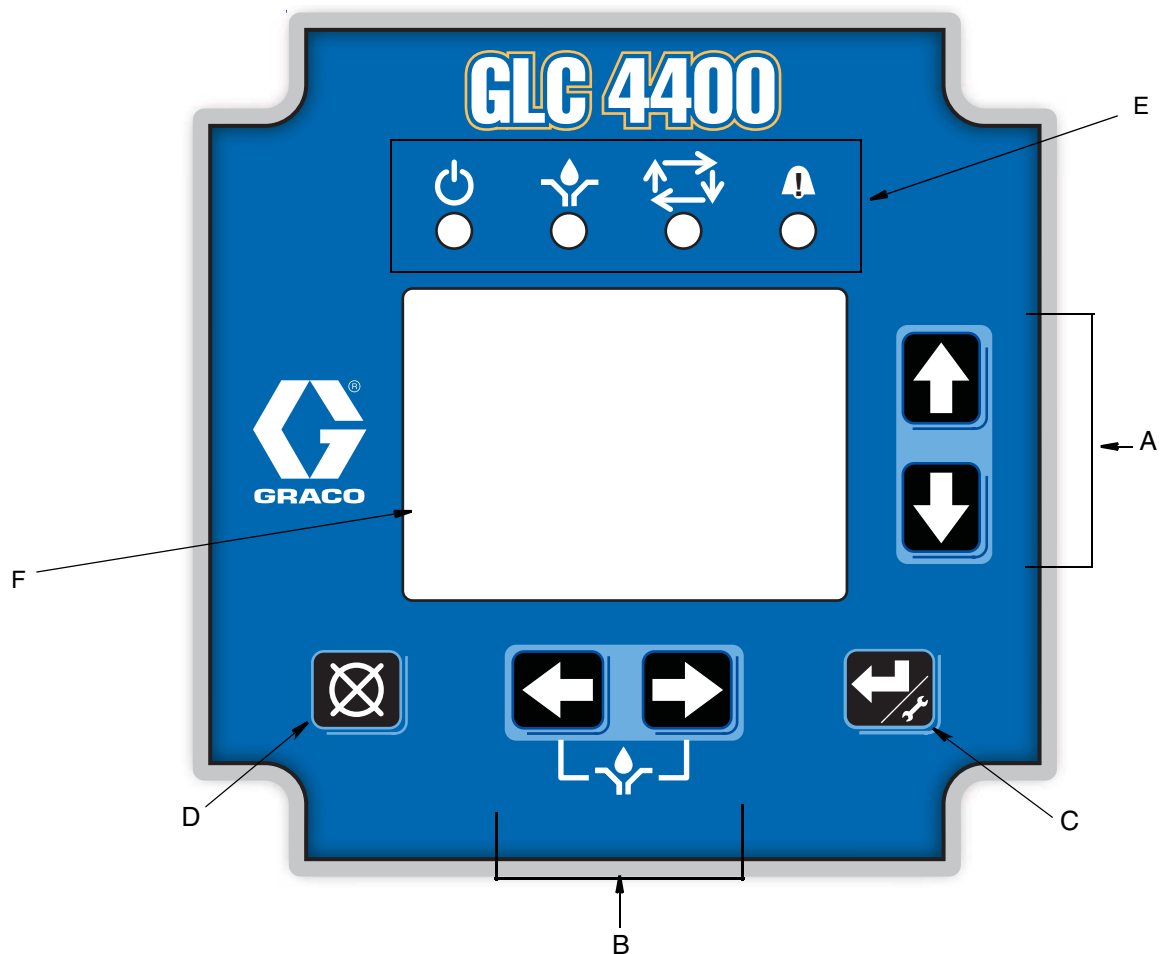


FIG. 1

Run Mode Functions

Direction Arrows

- A Up and Down Arrow Keys: Adjusts contrast.
- B Left and Right Arrow Keys: Adjusts brightness.
- Press the LEFT and RIGHT ARROW keys simultaneously to manually start a pump cycle.



















Keypad Icons

NOTE: Keypad Icons are described on Icon's page 4.

- C ENTER Key: Press and hold for 3 seconds. Allows access to setup.
- D RESET Key: Press and hold for 3 seconds. Resets unit to normal Pump Off state. Also is used to reset an alarm condition.
- E FUNCTION LED: See page 4 for a description of these icons.
- F DISPLAY

Icons

The following icons are used throughout this instruction manual and on the Controller's Run and Setup Screens. Refer to this table if you are unsure of an Icon's meaning.

-  **Power on indicator***. When power is supplied to the Lubrication Controller, Green LED illuminates under Function Icon located above display screen.
-  **Pump On indicator***. When Pump On is running, Yellow LED illuminates under Function Icon located above display screen. Icon also is displayed on top left side of Prelube Run screens (see page 30).
-  **Pump Off indicator**. When Pump Off is running, icon is displayed on top left side of Run screens (see page 31).
-  **Alarm event activated**. LED illuminates when an Alarm event occurs. Icon also displays on top right side of Alarm screen (see page 32).
-  **Brightness adjustment**. Use the LEFT/RIGHT Arrow key to adjust display backlight (brighter or darker) (see page 17).
-  **Contrast adjustment**. Use the UP/DOWN Arrow key to adjust screen contrast (see page 17).
-  **Low Level Alarm**. Icon appears on display screen. Indicates the lubrication fluid level is low.
-  **Change Icon**. When icon appears on PIN setup screen, indicates changes can be made to PIN number or new PIN number can be added.
-  **Lock Icon**. Indicates the Setup screens are password protected and require the user to provide the correct PIN number to access this feature.
-  **Setup mode active**. When user is on the Main Setup Screen in the Setup Mode, icon displays on the upper right corner of the display screen.
-  **Timer mode activated**. Displays on right side of screen when a Timer Setup or Run screen is displayed (pages 18, 21, 30 and 31).
-  **Pressure mode activated**. Icon displays on right side screen when a Pressure Setup or Run screen is displayed (page 19 and 30).
-  **Pressure mode error**. Icon displays on alarm screen to signal the allotted time ran out before the pressure switch was tripped.
-  **Cycle count mode active***. Yellow LED illuminates under Function Icon located above display screen. Icon also appears on right side of display screen when a Cycle Setup or Run screen is displayed (page 19 and 31).
-  **Machine count active**. Displays on right side of Setup or Run screen when a Machine Count screen is displayed (page 21 and 32).
-  **Machine count error**. When icon displays on alarm screen, indicates the set number of machine counts was not received before time expired (page 32). This would trigger an alarm event.
-  **Cycle switch input error**. Icon displays in center of Alarm screen to indicate the allotted time ran out before the programmed number of cycle switch activations was received (see Alarm Screen, page 32).
-  **Alarm***. Red LED illuminates under symbol located above display screen. Icon also appears on display when no valid run values have been entered.

*See Field E, page 3 for location of these Function Icons.

Installation

Typical Installation

The installation shown in FIG. 2 is only a guide for selecting and installing system components. Contact your Graco distributor for assistance in planning a system to suit your needs.

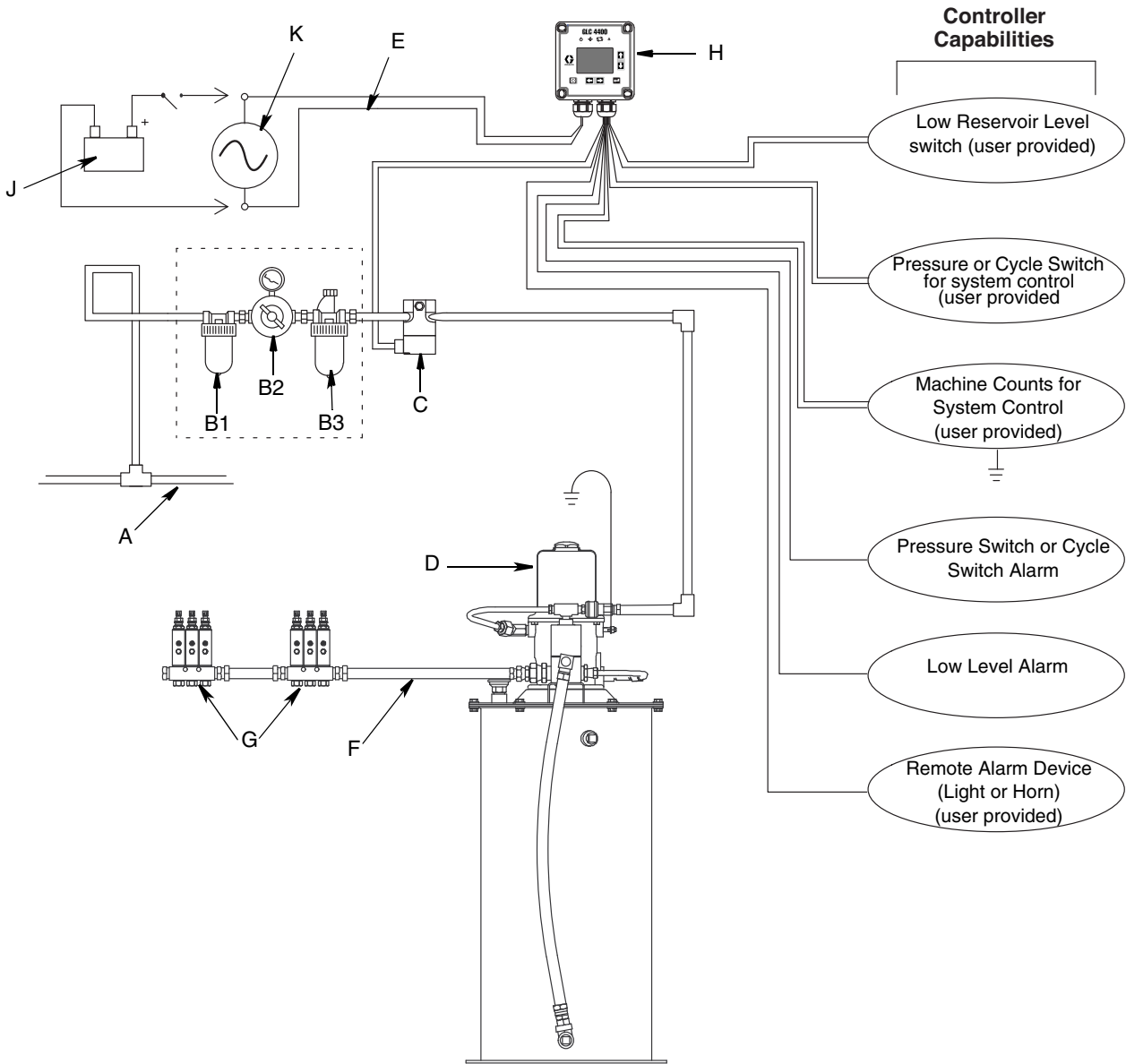


FIG. 2

- | | |
|--|---|
| <p>A Main Air Supply
 B Filter/Regulator/Lubricator Assembly
 B1 - Filter
 B2 - Regulator
 B3 - Lubricator
 C Air Solenoid Valve
 D Pump Module
 E Ignition Switch
 F High-Pressure Lubricant Supply Lines</p> | <p>G Injector Banks
 H Lubrication Controller
 J Model 24B591 12/24VDC Power Supply
 K Model 24B596 115/230VAC Power Supply</p> |
|--|---|

Installing the Lubrication Controller

AUTOMATIC SYSTEM ACTIVATION HAZARD						
Unexpected activation of the system could result in serious injury, including skin injection and amputation.						
This device has an automatic timer that activates the pump lubrication system when power is connected or when exiting the programming function. Before you install or remove the Lubrication Controller from the system, disconnect and isolate all power supplies and relieve all pressure.						

1. Select a flat surface to install the Lubrication Controller. Drill mounting holes. Refer to Mounting Hole Layout provided in the Technical Data section of this manual, page 34.

NOTICE
Pre-drill and use designated mounting holes in Lubrication Controller box only. Failure to use designated mounting holes can cause circuit board damage.

2. Remove Lubrication Controller cover and align junction box with predrilled holes (FIG. 3, (a)). Use four,

Grounding

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The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.

1. Loosen M6 screws from (b).
2. Attach up to 3 ground wires to (b) using appropriate sized M6 ring terminal (not provided).
3. If more than 3 wires are used, attach necessary amount of jumpers to other adjacent screw terminals.

#6 screws (not provided) to secure junction box to mounting surface.

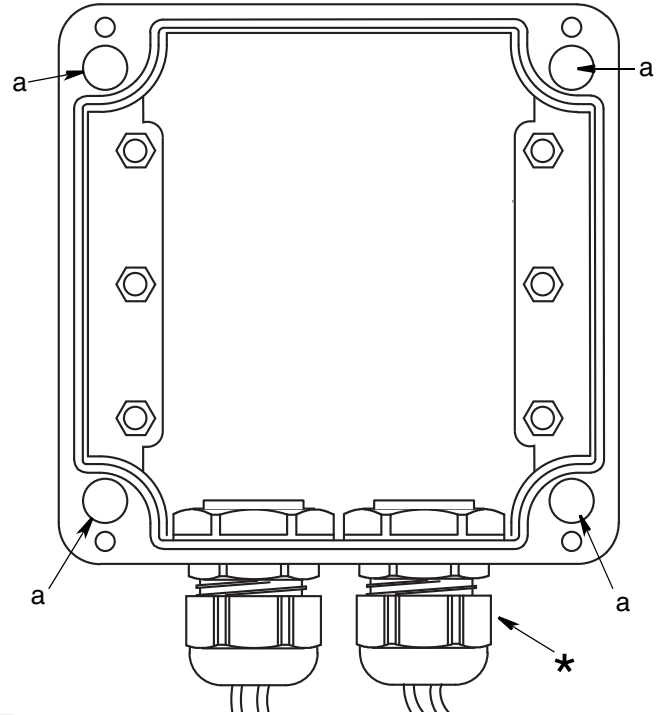


FIG. 3

* Parts not supplied. To maintain IP69K rating, proper connectors must be used.

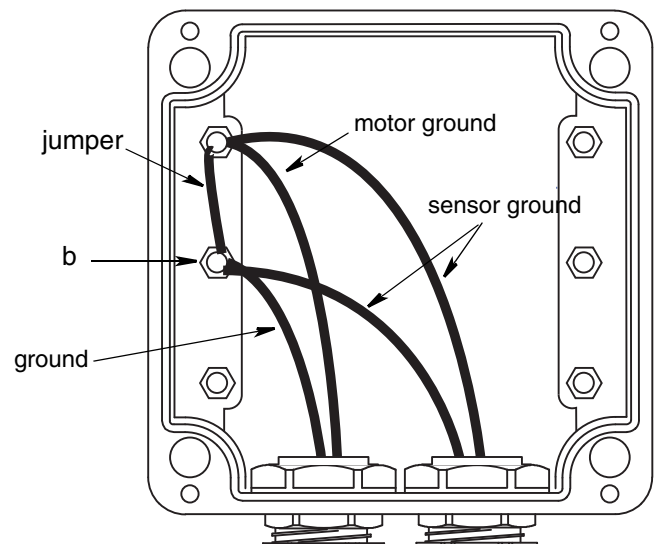
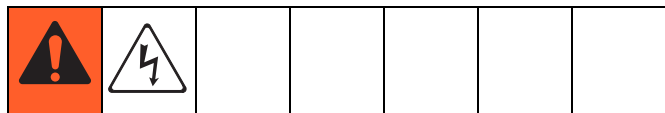


FIG. 4

System Configuration and Wiring



The System Configuration Diagrams (FIG. 5 - FIG. 7), Sensor Wiring Diagrams (FIG. 8 - FIG. 10) and Wiring Diagrams (FIG. 11 - FIG. 16) on the following pages, show typical Injector, Divider Valve and Dual Line lubrication system configurations.

Refer to Table 1, 2 and 3 to determine the Required System Configuration, Sensor Configuration and Wiring Diagram to use to setup your system.

Table 4 shows additional (optional) setup configurations (FIG. 17 - FIG. 19).

Table 1: System Configurations

System	Figure	Page
Divider Valve	5	8
Dual Line	6	9
Injector	7	10

Table 2: Sensor Wiring Configurations

Sensor	Figure	Page
Dry Contact	8	11
Sourcing	9	11
Sinking	10	11

Table 3: Modes of Operation

Mode	Power	Figure	Page
Time ON/Time OFF	DC	11	12
Time ON/Time OFF	AC	12	12
Cycle ON or Pressure ON/Time OFF	DC	13	13
Cycle ON or Pressure ON/Time OFF	AC	14	13
Cycle ON or Pressure ON/Machine Count OFF	DC	15	14
Cycle ON or Pressure ON/Machine Count OFF	AC	16	14

Table 4: Optional I/O Wiring Diagrams

System Mode	Power Supply Wiring Diagram
Low Level Switch	FIG. 17, page 15
External Manual Run	FIG. 17, page 15
O.K. Contact Out	FIG. 17, page 15
Auxiliary and Low Level Alarm Out	DC: FIG. 18, page 16 115/230 VAC: FIG. 19, page 16

System Configuration

Divider Valve System

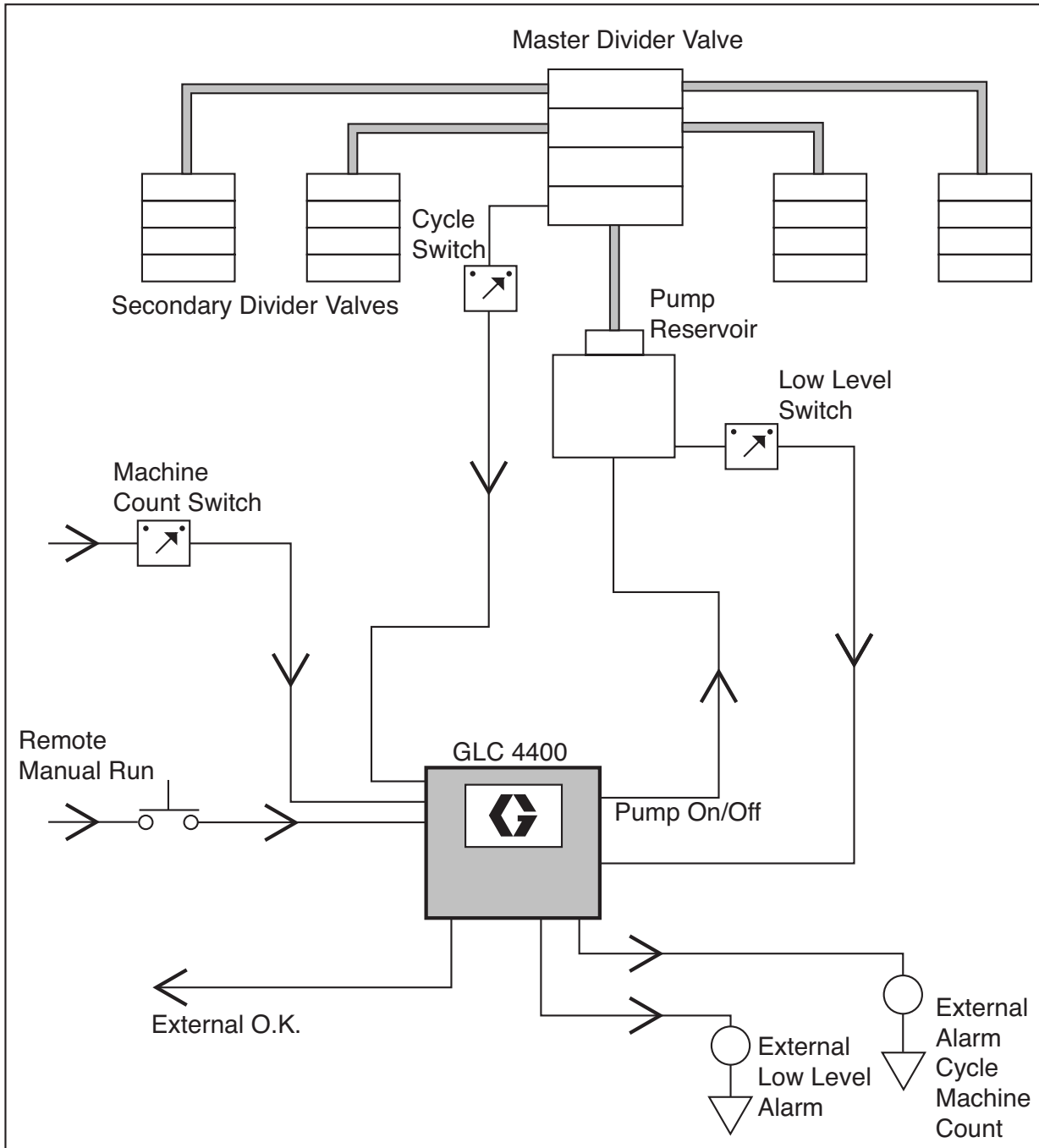


FIG. 5

Dual Line System

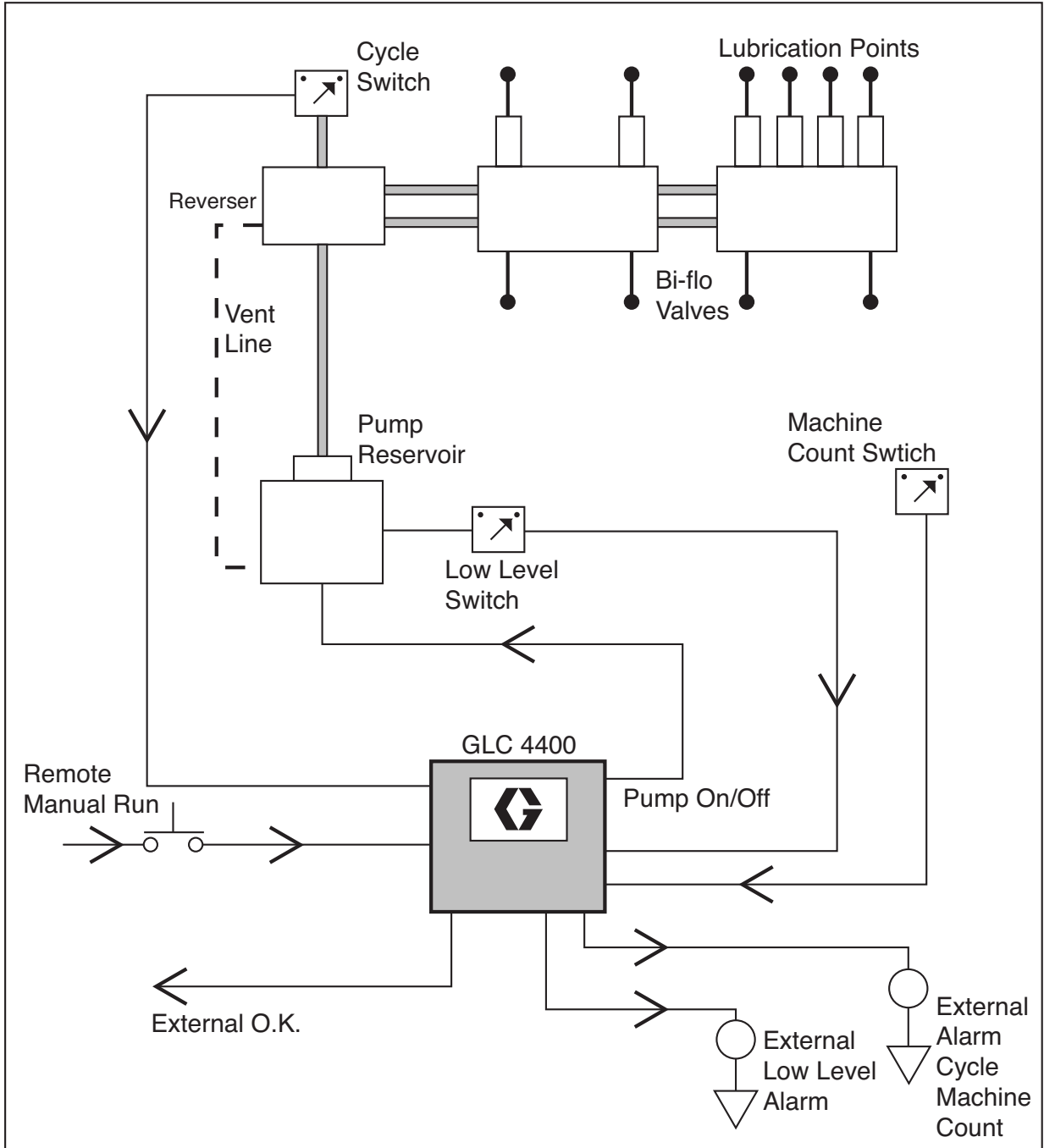


FIG. 6

Injector System

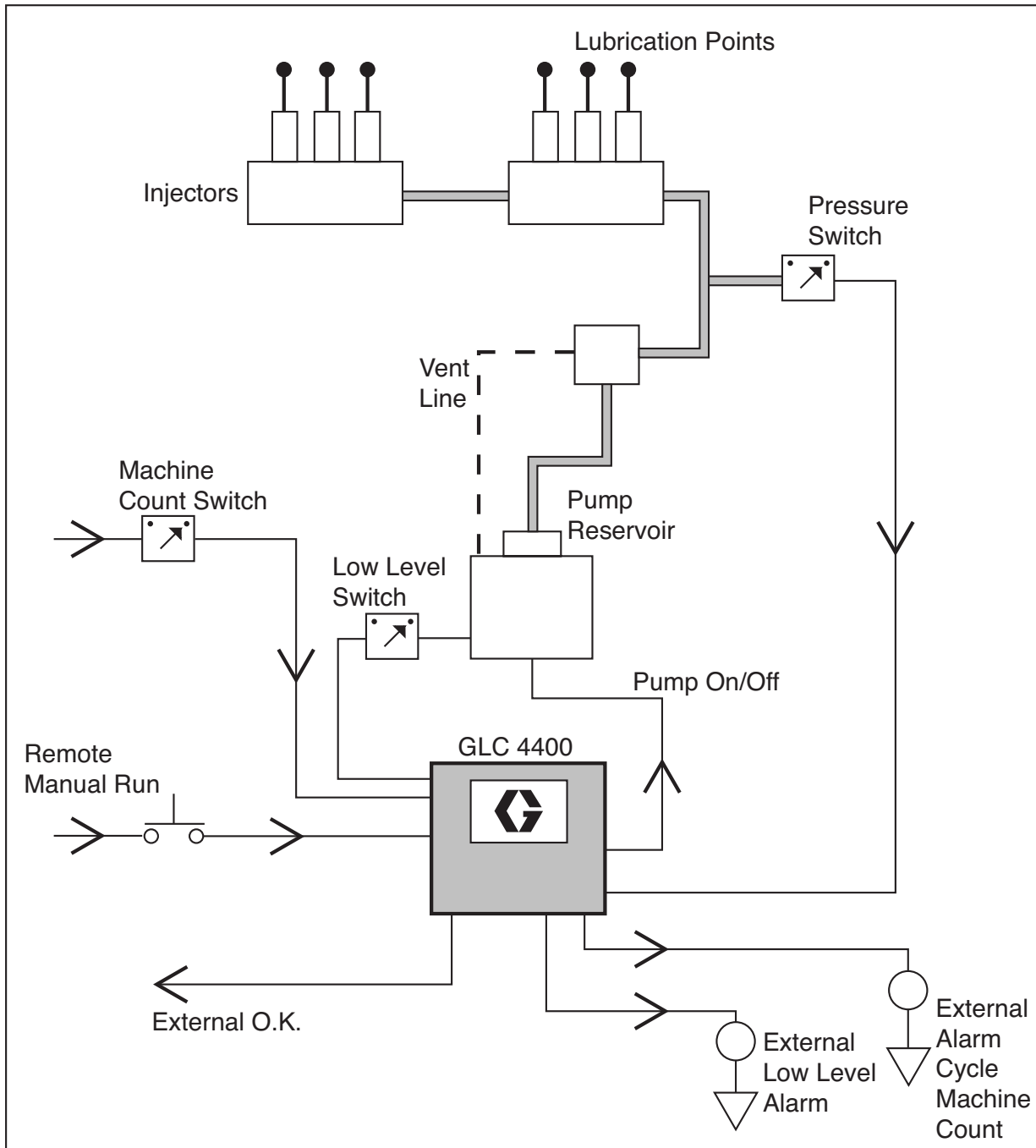


FIG. 7

System Wiring

NOTICE

Do not connect any of the SW+ (13,9,5,1) and SW- (16,12,8,4) pins together, either directly or via a switch closure. Doing so will create a short circuit condition which will disable and potentially damage the controller.

NOTE: On an AC controller (p/n 24B596), the J7 strip is line (input) voltage but the J6 strip is all 24VDC. On a DC controller (p/n 24B59'), the J6 and J7 terminals all carry the input voltage.

Input Sensor Wiring:

DRY CONTACT SWITCH

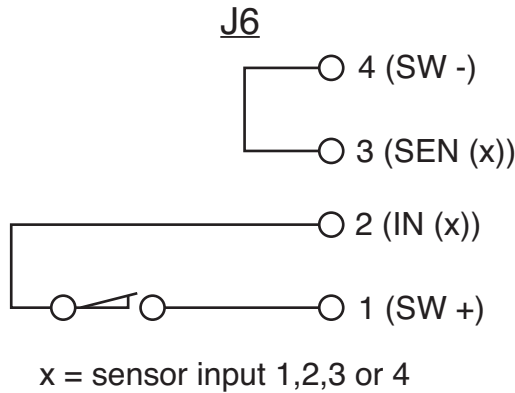


FIG. 8

SINK SWITCH - 2 or 3 Wire Type

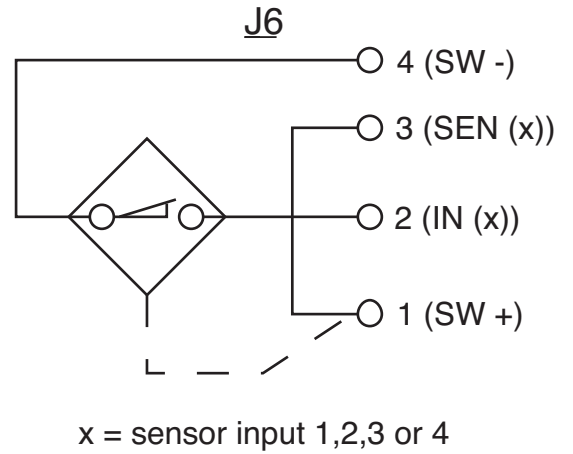


FIG. 10

SOURCE SWITCH - 2 or 3 Wire Type

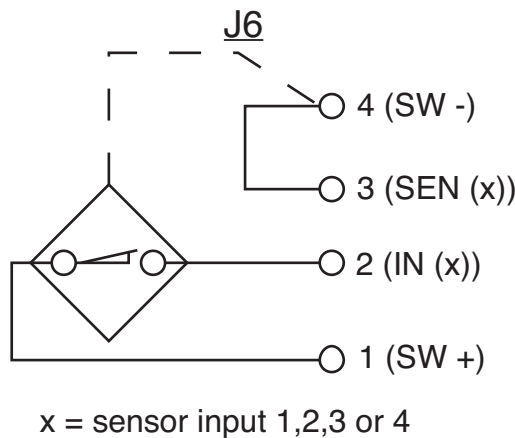


FIG. 9

Pump ON = Time; Pump OFF = Time

9 - 30VDC

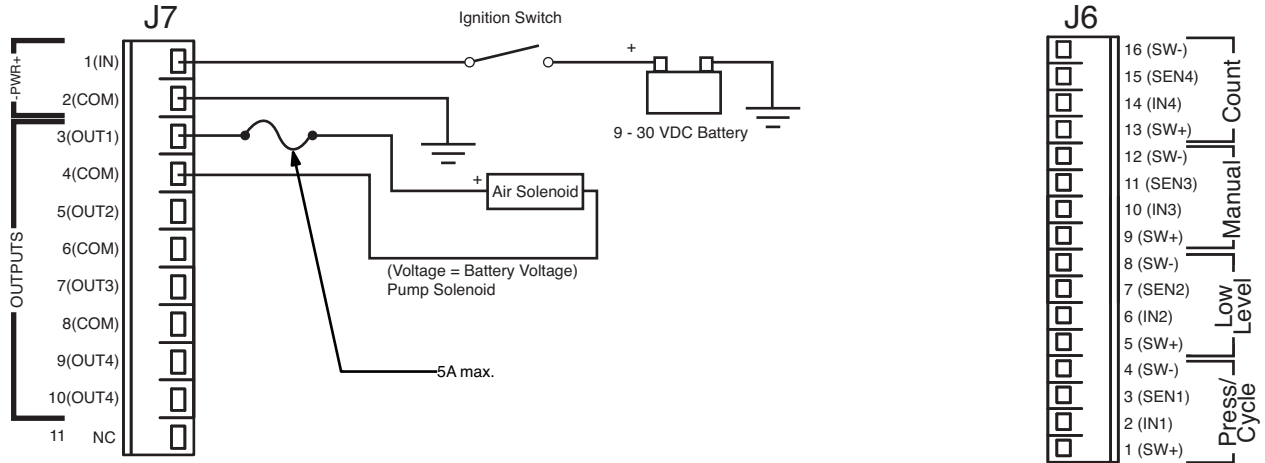


FIG. 11 *Dry Contact, FIG. 8 shown. For other configuration, see FIG. 9 or FIG. 10.

100VAC/240VAC

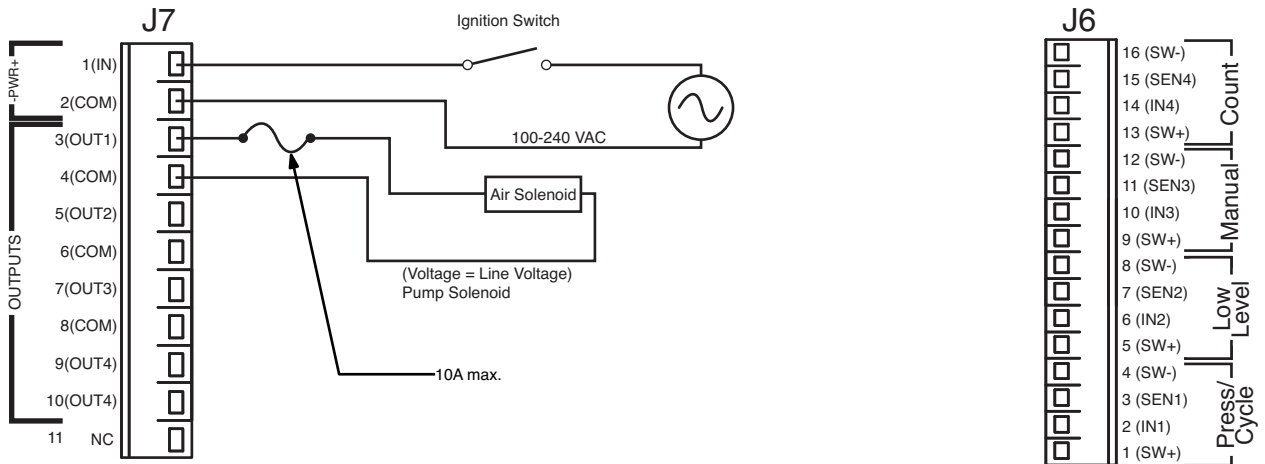


FIG. 12

System Wiring

Pump ON = Cycle or Pressure; Pump OFF = Machine Count

9 - 30VDC

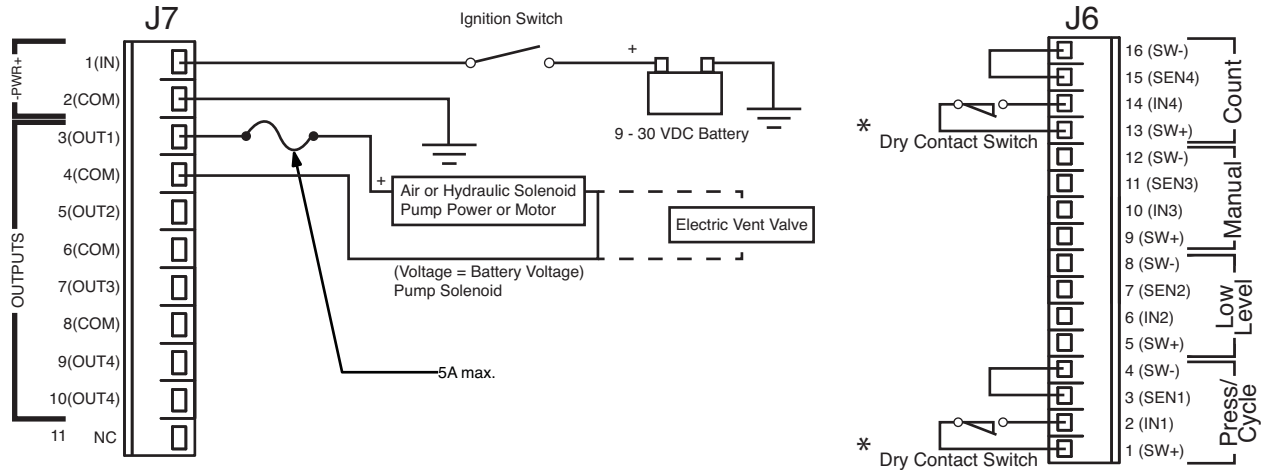


FIG. 15 Dry Contact, FIG. 8 shown. For other configuration, see FIG. 9 or FIG. 10.

100VAC/240VAC

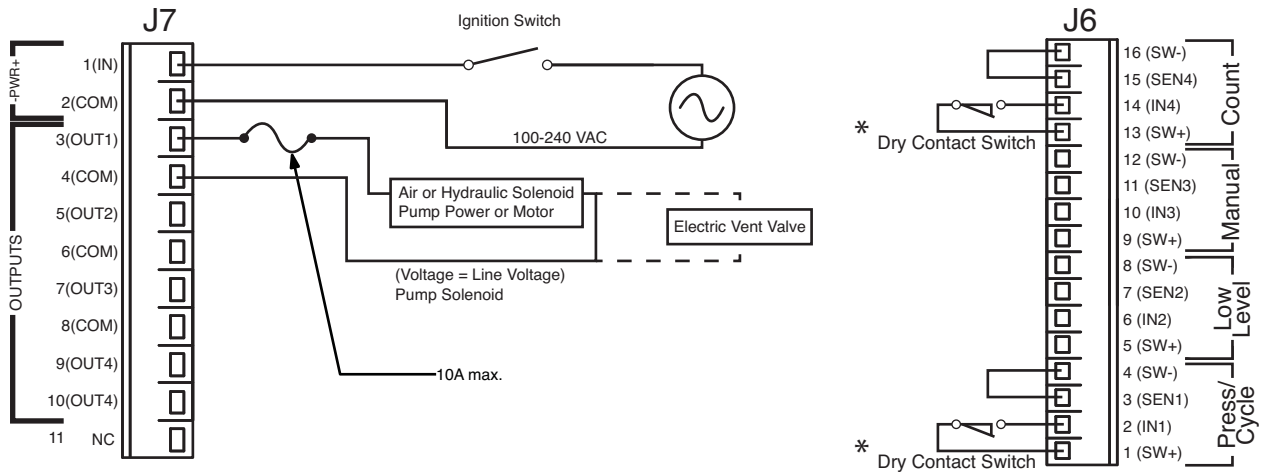


FIG. 16 Dry Contact, FIG. 8 shown. For other configuration, see FIG. 9 or FIG. 10.

System Wiring Options

NOTICE

Do not connect any of the SW+ (13,9,5,1) and SW- (16,12,8,4) pins together, either directly or via a switch closure. Doing so will create a short circuit condition which will disable and potentially damage the controller.

All Units: Low Level Switch / External Manual Run / O.K. Contact Out



FIG. 17 Dry Contact, FIG. 8 shown. For other configuration, see FIG. 9 or FIG. 10.

System Wiring Options: Alarm Out

9 - 30VDC

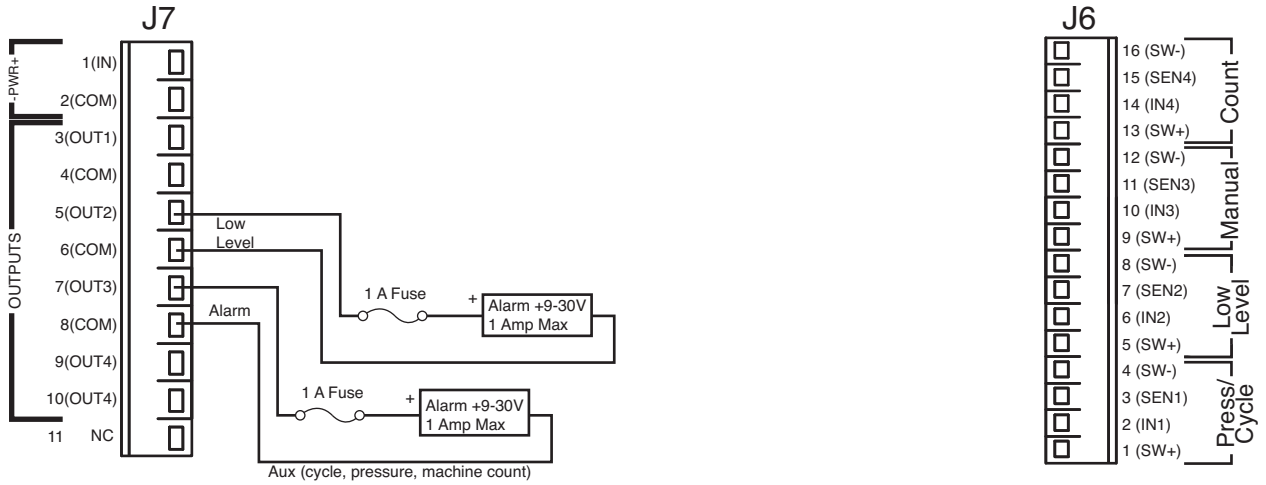


FIG. 18

100/240VAC

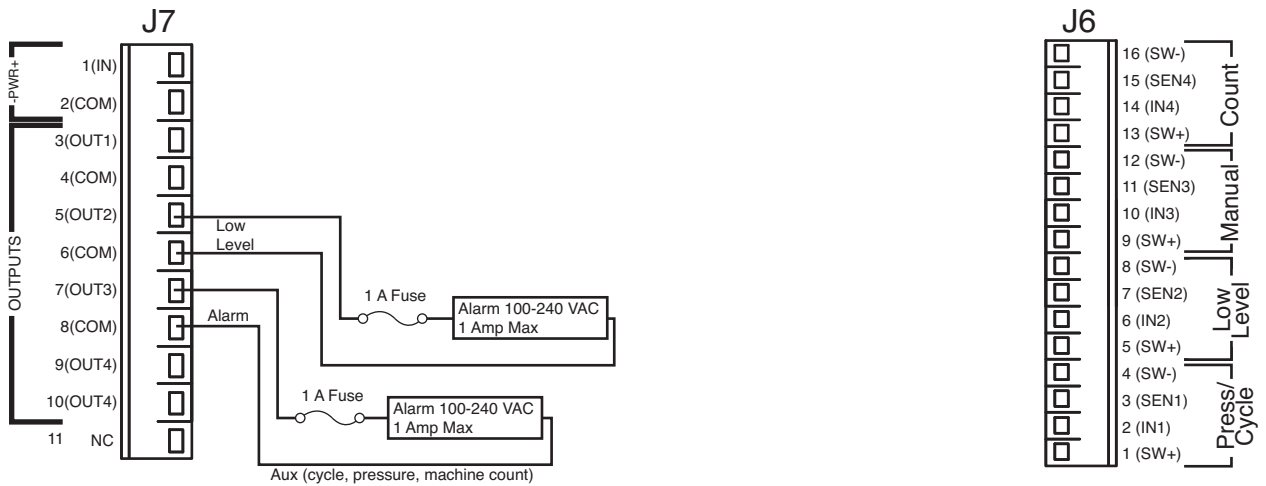
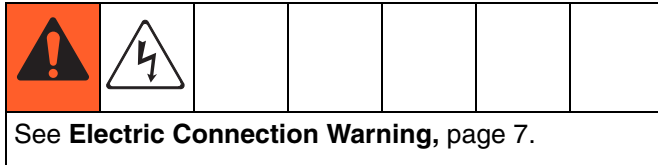


FIG. 19

Setup



When you first turn on power to the Lubrication Controller, the following identification screen displays.

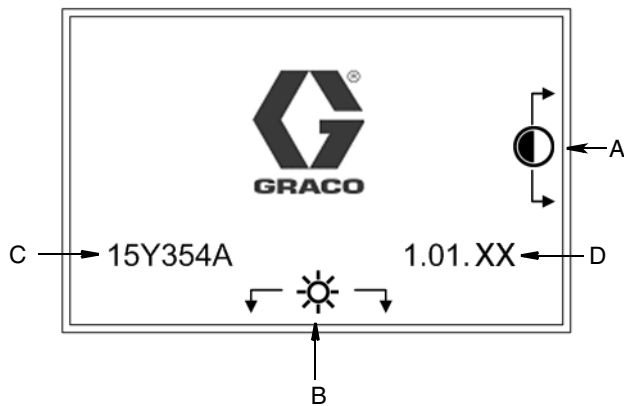


FIG. 20

- A **Display Contrast Adjustment:** UP and DOWN Arrows can be used to adjust the display contrast.
- B **Brightness Adjustment:** LEFT and RIGHT Arrows can be used to adjust the backlight brightness.

NOTE: Contrast and Brightness adjustments can be made on any Run Screen at any time.

C **Software (Part Number):** 15Y354

D **(Software) Version:** 1.01.XX

NOTE: The example of the Software Version (D) shown in FIG. 20 displays "XX" as the last two numerals. On your Controller's screen, the "XX" will be replaced by the current software version numbers.

System Setup - PIN Mode Enabled

- To access Setup Mode, hold down the ENTER key for 3 seconds. The PIN ModeScreen shown in FIG. 21 displays.

NOTE:

- The Pin Mode screen shown in FIG. 21 only displays when the PIN mode is enabled. For setting up systems when the PIN mode is not enabled, go to System Setup instructions on page 18.
- Before the PIN Mode screen shown in FIG. 21 can display, the PIN Mode must be enabled in an previous setup sequence. See PIN Setup, page 25.

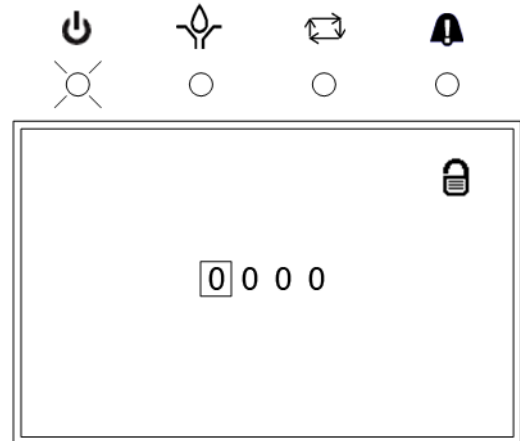


FIG. 21

- The PIN Mode screen in FIG. 21 displays.

NOTE: The PIN Code prompt spaces are initially blank.

- Use the LEFT / RIGHT arrow to position the cursor over the first blank PIN Code prompt field (FIG. 21).
- Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the PIN code is displayed in the field.
- Use the RIGHT arrow to move the cursor to the next field.
- Repeat steps 4 and 5 for each PIN Code prompt field.
- When finished, press ENTER.

8. If the PIN Code you entered is correct, the System Setup Screen, shown in FIG. 22 displays.
9. If the PIN Code you entered is incorrect, the digits flash. The Code must be re-entered by repeating steps 4 and 5.

NOTE:

- As soon as any arrow key is pressed, the numerals stop flashing.
- To leave any Setup Screen and return to normal operation, press RESET.

System Setup

Main Screen

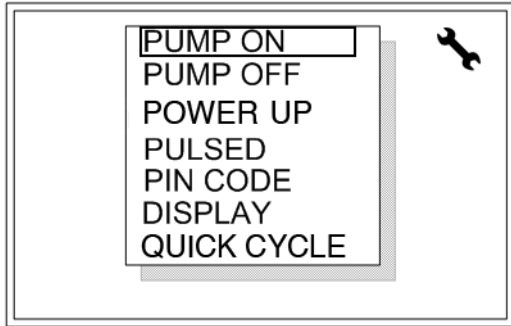


FIG. 22

1. Use the UP/DOWN arrows to move the cursor up and down through the list of setup screens (FIG. 22).
2. Press ENTER to display the selected setup screen.
3. When all setup operations are complete, press RESET to return to normal operation.

PUMP ON Setup

Pump On is the length of time the pump runs before its cycle is terminated by either a timer, a specific number of cycles or a certain pressure threshold is attained.

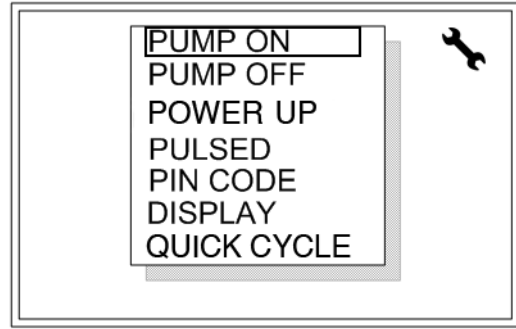


FIG. 23

1. Use the UP/DOWN Arrow keys to move the cursor over PUMP ON.
2. Press ENTER to display the PUMP ON setup screen.

TIMER Setup

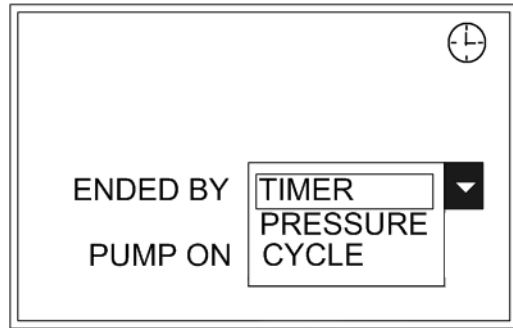


FIG. 24

NOTE: Time is displayed in HH:MM:SS.

1. Use the Arrow keys to move the cursor over the PUMP ON time box.
2. Press ENTER.
3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the PUMP ON time is displayed in the field.
4. Use the RIGHT arrow to move the cursor to the next field.
5. Repeat steps 3 and 4 until the desired time is displayed.
6. Use the Arrow keys to move the cursor over the ENDED BY pull-down list.

7. Press ENTER.
8. Select TIMER from the pull-down list.
9. Press RESET. The Main Screen displays.

NOTE: When TIMER is selected, the Timer Icon will display on the top right corner of the screen.

PRESSURE Setup

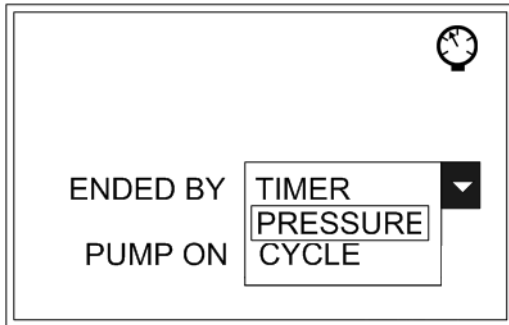


FIG. 25

NOTE: Time is displayed in HH:MM:SS.

1. Use the Arrow keys to move the cursor over the PUMP ON time box.
2. Press ENTER.
3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the PUMP ON time is displayed in the field.
4. Use the RIGHT arrow to move the cursor to the next field.
5. Repeat steps 3 and 4 until the desired time is displayed.
6. Use the Arrow keys to move the cursor over the ENDED BY pull-down list.
7. Press ENTER.
8. Select PRESSURE from the pull-down list.
9. Press RESET. The Main Screen, page 18 displays.

NOTE: When PRESSURE is selected, the Pressure Icon will display on the top right corner of the screen.

CYCLE END Setup

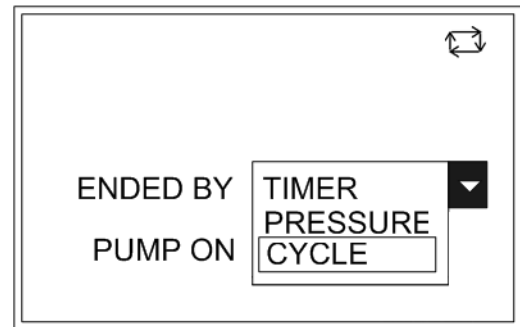


FIG. 26

NOTE: Time is displayed in HH:MM:SS.

1. Use the Arrow keys to move the cursor over the PUMP ON time box.
2. Press ENTER.
3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the PUMP ON time is displayed in the field.
4. Use the RIGHT arrow to move the cursor to the next field.
5. Repeat steps 3 and 4 until the desired time is displayed.
6. Use the Arrow keys to move the cursor over the ENDED BY pull-down list.
7. Press ENTER.
8. Select CYCLE from the pull-down list.
9. Press ENTER.

Cycle Mode Selection

If the Cycle Mode is selected you will also be prompted to set the desired number of cycles.

NOTE: A cycle is equal to two switch closure transitions at the cycle switch input.

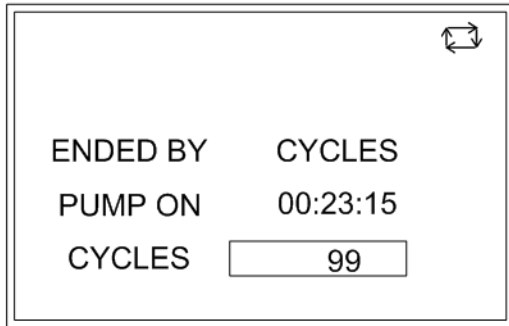


FIG. 27

10. Use the Arrow keys to move the cursor over the CYCLES field.
11. Press ENTER.
12. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number you want in the CYCLES field is displayed.
13. Use the RIGHT arrow to move the cursor to the next field. Repeat step 12.

NOTE: The maximum number of Cycles you can setup in this field is 99.

14. Press RESET. The Main Screen, page 18 displays.

NOTE: When Cycles is selected, the Cycles Icon displays in the upper right corner of the screen.

PUMP OFF Setup

Sets up how the PUMP OFF cycle is ended: Time, Machine Count switch activation, or Machine Count activations limited by a maximum time.

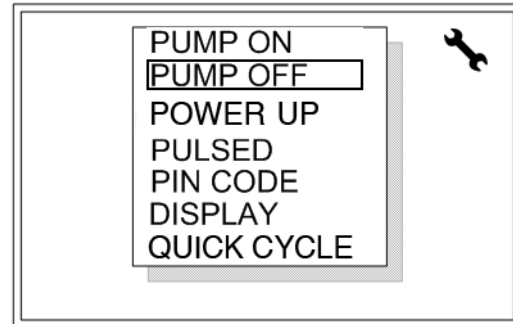


FIG. 28

1. Use the UP/DOWN Arrow keys to move the cursor over PUMP OFF.
2. Press ENTER to display the PUMP OFF setup screen.

To Set the Pump OFF Option

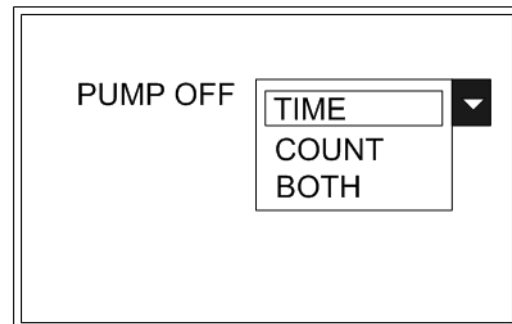
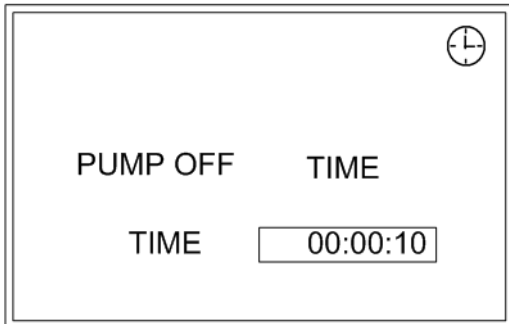


FIG. 29

1. Use the Arrow keys to move the cursor over the PUMP OFF pull-down menu.
2. Press ENTER.
3. Use the UP/DOWN Arrow keys to move cursor to select TIME, COUNT or BOTH.
4. After you make your selection, Press ENTER.

If TIME is selected:

If TIME is selected you will also be prompted to set the specific amount of time.

**FIG. 30**

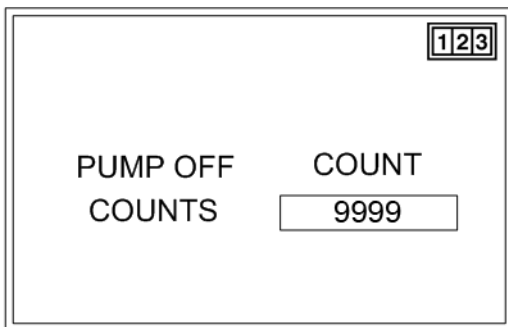
1. Use the Arrow keys to move the cursor over the TIME field.
2. Press ENTER.

NOTE: Time is displayed in HH:MM:SS.

3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the pump off TIME is displayed in the field.
4. Use the RIGHT arrow to move the cursor to the next field.
5. Repeat steps 3 and 4 until the desired time is displayed.
6. Press RESET. The Main Screen, page 18 displays.

If COUNT is selected:

If COUNT is selected you will also be prompted to set the specific number of counts.

**FIG. 31**

1. Use the Arrow keys to move the cursor over the COUNTS field.
2. Press ENTER.
3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number you want in the COUNTS field is displayed.
4. Use the RIGHT arrow to move the cursor to the next field. Repeat step 3.

NOTE: The maximum number of Counts you can setup in this field is 9999.

5. Press RESET. The Main Screen, page 18 displays.

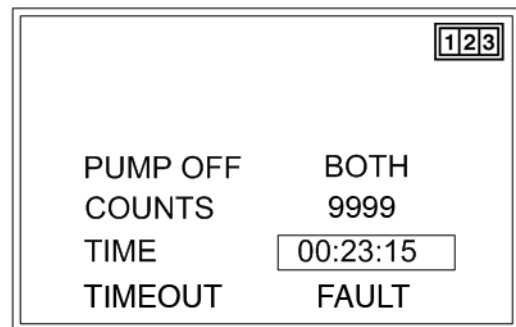
If BOTH is selected:

If PUMP OFF is set to BOTH, the GLC 4400 will stay in the PUMP OFF state until the entered number of machine counts is received or the time expires.

If TIMEOUT is set to FAULT, an alarm will occur when the time expires.

If TIMEOUT is set to RUN, the unit will enter PUMP ON when time expires.

If BOTH is selected you will be prompted to set the specific amount of time and determine what occurs when time expires.

**FIG. 32**

1. Use the Arrow keys to move the cursor over the COUNTS field.
2. Press ENTER.
3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number you want in the COUNTS field is displayed.

- Use the RIGHT arrow to move the cursor to the next field. Repeat step 3.

NOTE: The maximum number of Counts you can setup in this field is 9999.

- Use the Arrow keys to move the cursor over the TIME field.
- Press ENTER.

NOTE: Time is displayed in HH:MM:SS.

- Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the PUMP OFF time is displayed in the field.
- Use the RIGHT arrow to move the cursor to the next field. Repeat step 7.
- Repeat steps 7 and 8 until the desired time is displayed.
- Press ENTER.
- Use the Arrow keys to move the cursor over the TIMEOUT pull-down menu.

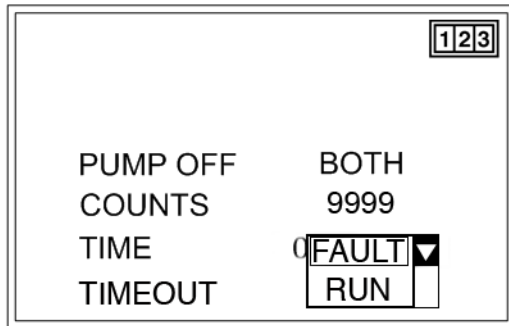


FIG. 33

- Press ENTER.
- When time expires:
 - Select FAULT if an alarm should occur.
 - Select RUN if unit should enter PUMP ON.
- Press ENTER.
- Press RESET. The Main Screen, page 18 displays.

NOTE: If Count or Both is selected, the Count Icon displays in the upper right corner of the screen.

POWER UP Setup

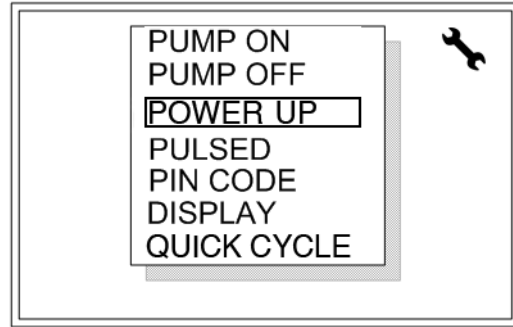


FIG. 34

- Use the UP/DOWN Arrow keys to move the cursor over POWER UP.
- Press ENTER to display the POWER UP setup screen.

Power Up can be programmed one of four ways:

First: At Power Up, the normal lube cycle that was in process when power was removed, is resumed.

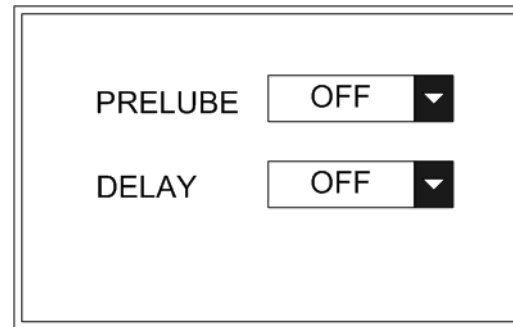


FIG. 35

- Use the Arrow keys to move the cursor over the POWER UP pull-down menu.
- From the pull-down menu, select OFF.
- Press ENTER.
- Use the Arrow keys to move the cursor over the DELAY pull-down menu.
- From the pull-down menu, select OFF.
- Press RESET. The Main Screen, page 18 displays.

Second: At Power Up, a delay occurs, the pump is off; then the normal lube cycle that was in process when power was removed, is resumed.

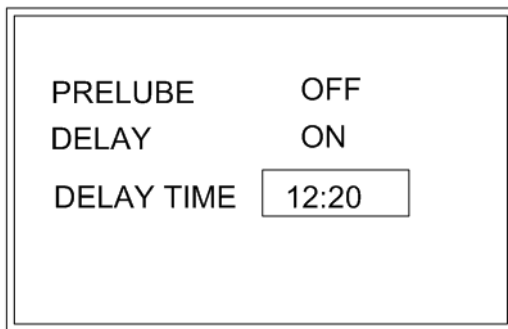


FIG. 36

1. Use the Arrow keys to move the cursor over the POWER UP pull-down menu.
 2. From the pull-down menu, select OFF.
 3. Press ENTER.
 4. Use the Arrow keys to move the cursor over the DELAY pull-down menu.
 5. From the pull-down menu, select ON.
 6. Press ENTER.
 7. Use the Arrow keys to move the cursor over the DELAY TIME field.
 8. Press ENTER.
- NOTE: Time is displayed in MM:SS.
9. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the DELAY TIME is displayed in the field.
 10. Use the RIGHT arrow to move the cursor to the next field. Repeat step 9.
 11. Repeat steps 9 and 10 until the desired time is displayed.
 12. Press RESET. The Main Screen, page 18 displays.

Third: At Power Up, immediately go to PUMP ON (normal on time)..

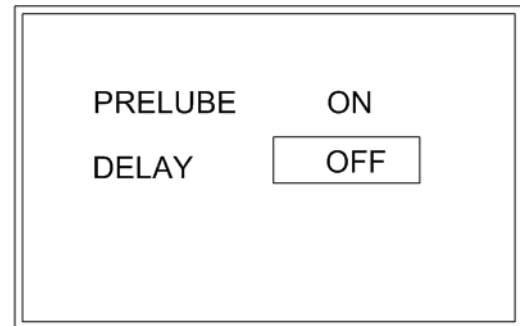


FIG. 37

1. Use the Arrow keys to move the cursor over the POWER UP pull-down menu.
2. From the pull-down menu, select ON.
3. Press ENTER.
4. Use the Arrow keys to move the cursor over the DELAY pull-down menu.
5. From the pull-down menu, select OFF.
6. Press RESET. The Main Screen, page 18 displays.

Fourth: At Power Up, go to programmed PUMP OFF delay time; then to normal PUMP ON.

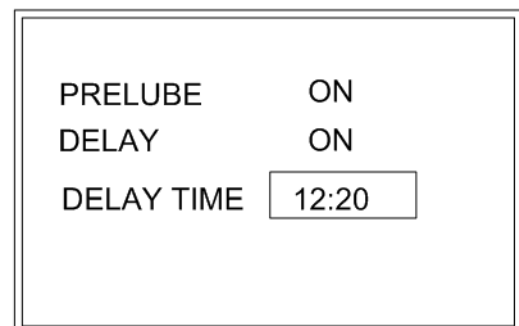


FIG. 38

1. Use the Arrow keys to move the cursor over the POWER UP pull-down menu.
2. From the pull-down menu, select ON.
3. Press ENTER.
4. Use the Arrow keys to move the cursor over the DELAY pull-down menu.

5. From the pull-down menu, select ON.
6. Press ENTER.
7. Use the Arrow keys to move the cursor over the DELAY TIME field.
8. Press ENTER.

NOTE: Time is displayed in MM:SS.

9. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the DELAY TIME is displayed in the field.
10. Use the RIGHT arrow to move the cursor to the next field. Repeat step 9.
11. Repeat steps 9 and 10 until the desired time is displayed.
12. Press RESET. The Main Screen, page 18 displays.

PULSED Setup

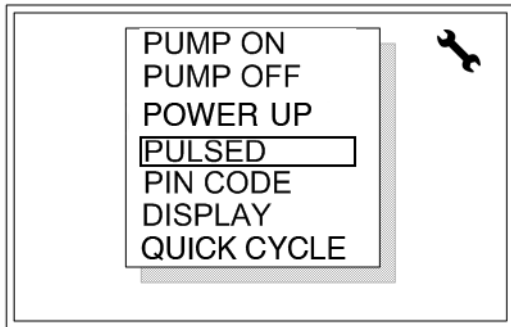


FIG. 39

1. Use the UP/DOWN Arrow keys to move the cursor over PULSED.
2. Press ENTER to display the PULSED setup screen.

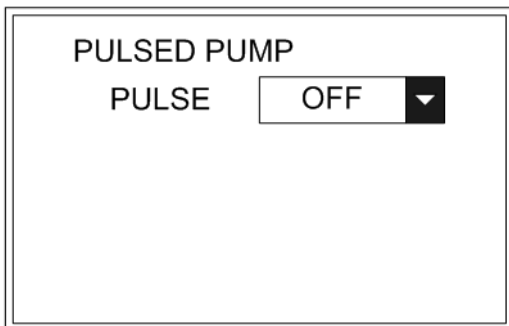


FIG. 40

Pulsed Pump Screen

1. Use the Arrow keys to move the cursor over the PULSE pull-down menu.
2. Press ENTER.
3. Use the UP/DOWN Arrow keys to move cursor to select ON.
4. Press ENTER.

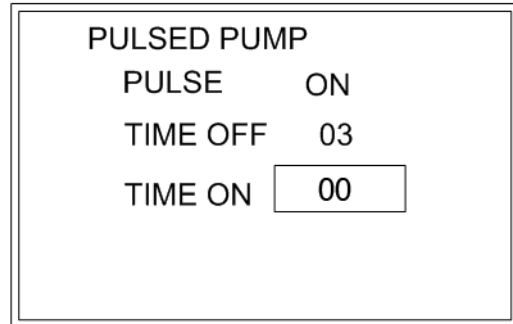


FIG. 41

5. Use the Arrow keys to move the cursor over the TIME OFF field.
 6. Press ENTER.
- NOTE: The time is displayed in Seconds.
7. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number of the TIME OFF you are creating is displayed in the field.
 8. Use the RIGHT arrow to move the cursor to the next field. Repeat step 7.
 9. Press ENTER.

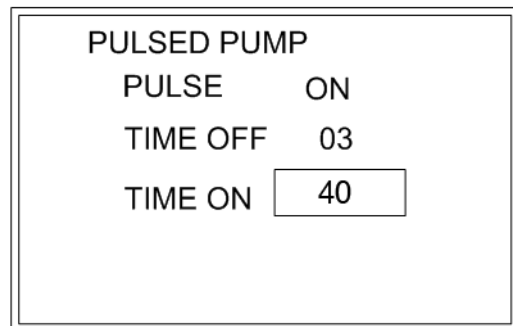


FIG. 42

10. Use the Arrow keys to move the cursor over the TIME ON field.

11. Press ENTER.

NOTE: The time is displayed in Seconds.

12. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number of the TIME ON you are creating is displayed in the field.

13. Use the RIGHT arrow to move the cursor to the next field. Repeat step 7.

14. Press ENTER.

15. Press RESET. The Main Screen, page 18 displays.

NOTE:

- The maximum Time Off and Time On is 99 seconds.
- The minimum Time Off is 3 seconds.
- The minimum Time On is 0 (zero) seconds.

PIN Setup

If protection for the setup mode is desired, a PIN Code entry can be enabled.

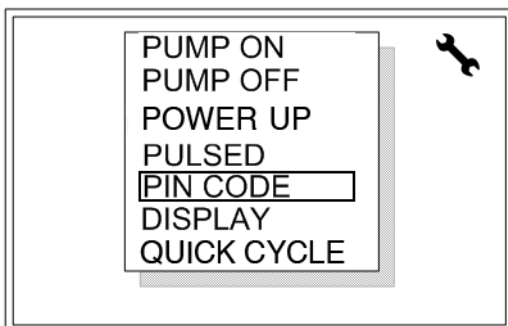


FIG. 43

1. Use the UP/DOWN Arrow keys to move the cursor over PIN CODE.
2. Press ENTER to display the PIN CODE setup screen.

To enable PIN Code Entry:

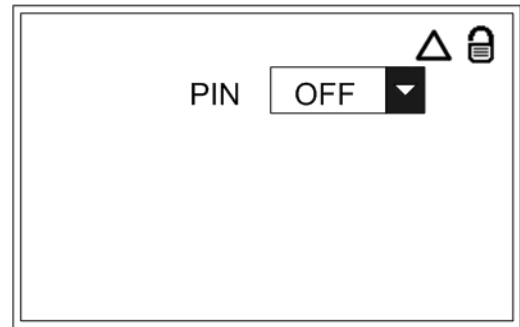


FIG. 44

1. Use the Arrow keys to move the cursor over the PIN pull-down menu.
2. Press ENTER.
3. Use the UP/DOWN Arrow keys to move cursor to select ON.
4. Press ENTER.

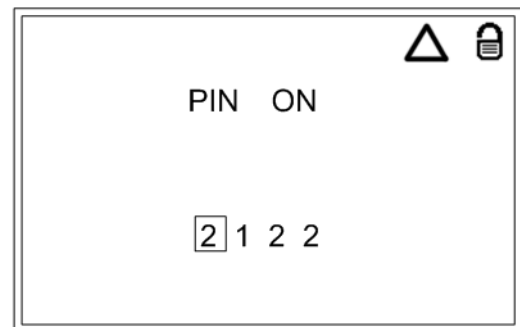


FIG. 45

5. Use the Arrow keys to move the cursor over the PIN CODE prompt field.
6. Use the LEFT/RIGHT arrow to position the cursor over the first blank Pin Code prompt field (FIG. 21).
7. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the PIN code you are creating is displayed in the field.
8. Use the RIGHT arrow to move the cursor to the next field. Repeat step 7
9. Repeat steps 7 and 8 for each PIN Code prompt.
10. Press RESET. The Main Screen, page 18 displays.

DISPLAY Setup

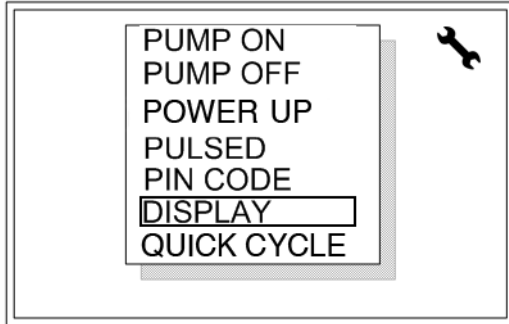


FIG. 46

1. Use the UP/DOWN Arrow keys to move the cursor over DISPLAY.
2. Press ENTER to display the DISPLAY setup screen.

Display Backlight

The display backlight can be set to turn off after a programmed amount of time. If the backlight is OFF it will turn back on when any front panel key is pressed.

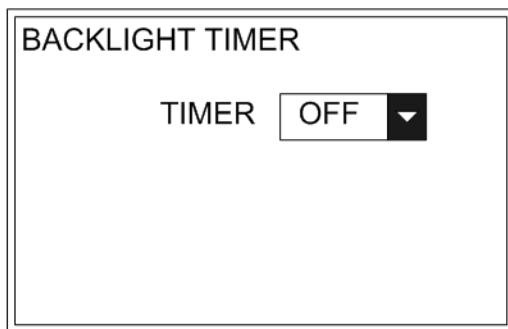


FIG. 47

1. Use the Arrow keys to move the cursor over the TIMER pull-down menu.
2. From the pull-down menu, select ON.
3. Press ENTER.

4. Use the Arrow keys to move the cursor over the TIME ON field.

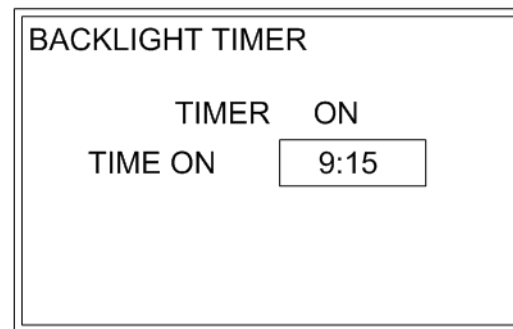


FIG. 48

NOTE: Time is displayed in HH:MM.

5. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the TIME ON is displayed in the field.
6. Use the RIGHT arrow to move the cursor to the next field. Repeat step 5.
7. Repeat steps 5 and 6 until the desired time displays.
8. Press RESET. The Main Screen, page 18 displays.

QUICK CYCLE Setup

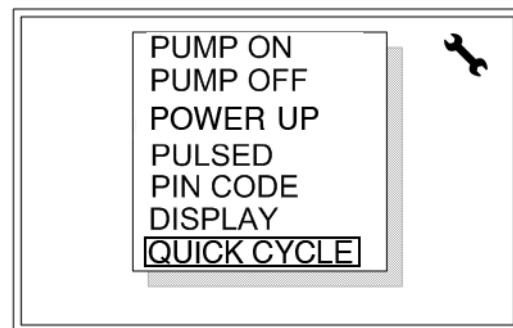


FIG. 49

1. Use the UP/DOWN Arrow keys to move the cursor over QUICK CYCLE.
2. Press ENTER to display the QUICK CYCLE setup screen.

Quick Cycle Screen Setup

The Quick Cycle screen setup is used to setup a Troubleshooting profile.

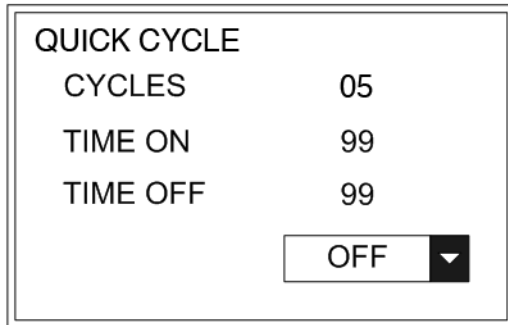


FIG. 50

1. Use the Arrow keys to move the cursor over the CYCLES field.
2. Press ENTER.
3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number you want in the CYCLES field is displayed.
4. Use the RIGHT arrow to move the cursor to the next field. Repeat step 3.

NOTE: The maximum number of Cycles you can setup in this field is 99.

5. Use the Arrow keys to move the cursor over the TIME ON field.
6. Press ENTER.

NOTE: Time On and Time Off in QUICK CYCLE mode only, are displayed in Seconds.

7. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number you want to use in the TIME ON field is displayed in the field.
8. Use the RIGHT arrow to move the cursor to the next field. Repeat step 7.
9. Press ENTER.
10. Use the Arrow keys to move the cursor over the TIME ON field.
11. Press ENTER.

12. Repeat steps 7 - 9 for the TIME OFF field.
13. Use the Arrow keys to move the cursor over the pull-down menu.
14. Select ON.
15. The Quick Cycle begins.

NOTE:

- The maximum Time Off and Time On is 99 seconds.
- When complete, the system returns to the Run Mode. It does not come back to the Quick Cycle Setup Screen.

LOW LEVEL FILTERING Setup

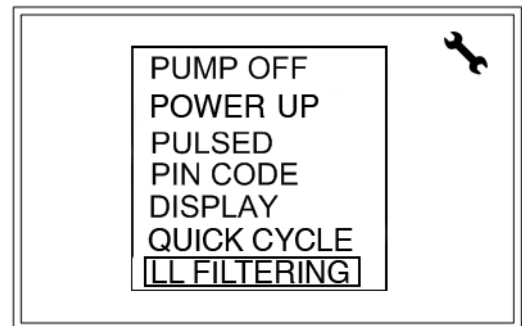


FIG. 51

1. Use the UP/DOWN Arrow keys to move the cursor over LL FILTERING.
2. Press ENTER to display the LL FILTERING setup screen.

Low Level Filtering Screen Setup

The Low Level Filtering screen setup is used to filter out spurious signals from rotating paddle type low level sensors.

NOTE: When using the GLC4400 with the G3 Automatic Lubrication Pump, it is recommended that the low level filtering be set to G3 defaults.

The NUMBER field determines how many signal activations are required to set a fault.

The TIME field determines the amount of RUN time required without an activation to reset the activation count to 0 (zero).

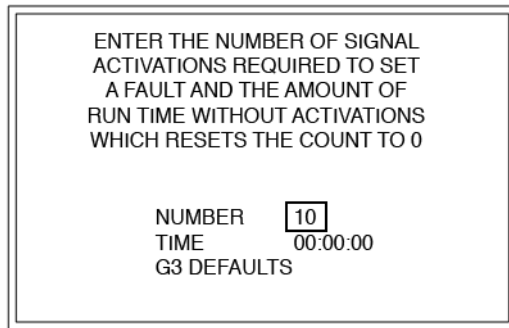


FIG. 52

1. Use the Arrow keys to move the cursor over the NUMBER field.
2. Press ENTER.
3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number you want in the NUMBER field is displayed.
4. Use the RIGHT arrow to move the cursor to the next field. Repeat step 3.
5. Use the Arrow keys to move the cursor over the TIME field.
6. Press ENTER.
7. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the TIME field is displayed.
8. Use the RIGHT arrow to move the cursor to the next field. Repeat step 7.
9. Repeat steps 7 and 8 until the desired time is displayed.
10. Press ENTER.
11. If the default values for the G3 Automatic Lubrication Pump are intended to be used, use the UP/DOWN arrows to move to the G3 DEFAULT field.
12. Press ENTER. The NUMBER and TIME values will be updated to the G3 default value.
13. Press RESET. The Main Screen, shown on page 18, displays.

1. Use the Arrow keys to move the cursor over the NUMBER field.
2. Press ENTER.
3. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number you want in the NUMBER field is displayed.
4. Use the RIGHT arrow to move the cursor to the next field. Repeat step 3.

NOTE: The maximum number of Counts you can setup in this field is 99.

5. Use the Arrow keys to move the cursor over the TIME field.
6. Press ENTER.

NOTE: Time is displayed in HH:MM:SS.

7. Use the UP/DOWN arrows to move up and down through the numbers 0-9 until the first number in the TIME field is displayed.

Run Mode

When you first turn the Lubrication Controller power on, the identification screen shown in FIG. 53 displays.

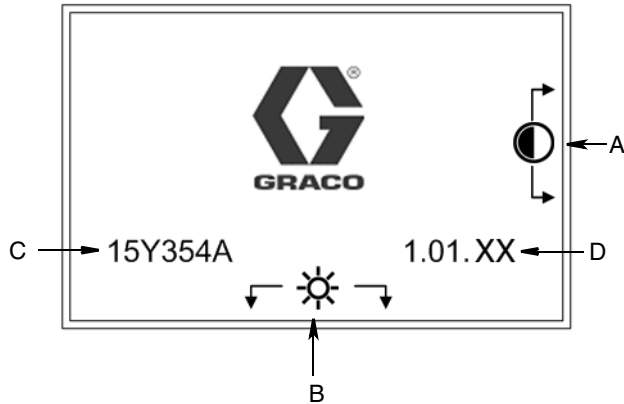


FIG. 53

- A **Display Contrast Adjustment:** UP and DOWN Arrows can be used to adjust the display contrast.
- B **Backlight Brightness Adjustment:** LEFT and RIGHT Arrows can be used to adjust the backlight brightness.

NOTE: Contrast and Brightness adjustments can be made on any Run Screen at any time.

- C **Software (Part Number):** 15Y354
- D **(Software) Version:** 1.01.XX

Screen Identification

The following screen is only shown as an example of the information that is displayed on a Run screen. A complete description of the icons and symbols shown in FIG. 54 is provided on page 3.

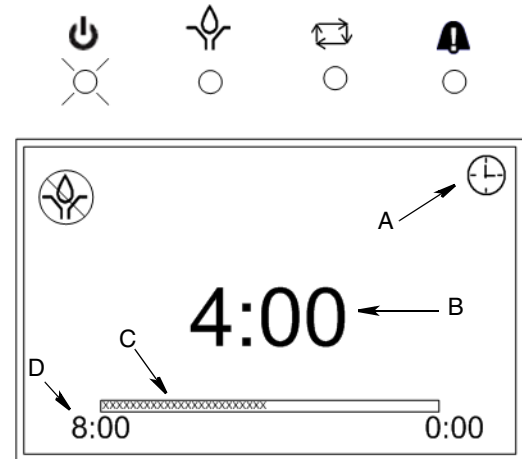


FIG. 54

- A **Operating Mode Identification** - Sets up Pump On/ Pump Off, page 22.
- B **Time Counter** - Actual elapsed time counts down while the pump runs - set up in Pump On Setup, page 18.
- C **Progression Bar** - Real-time, visual representation of the elapsed time the pump has been on. Runs in conjunction with B.
- D **Total Pump On Time** - Shows the total amount of time the pump is on. Setup on the Pump On setup screen, page 18.

Prelube Power Up



FIG. 55

If Prelube is enabled (page 22), the programmed pre-lube sequence occurs.

If no Prelube sequence has been selected, the lube cycle that was in progress at power down is resumed.

Pump On Ended with Time

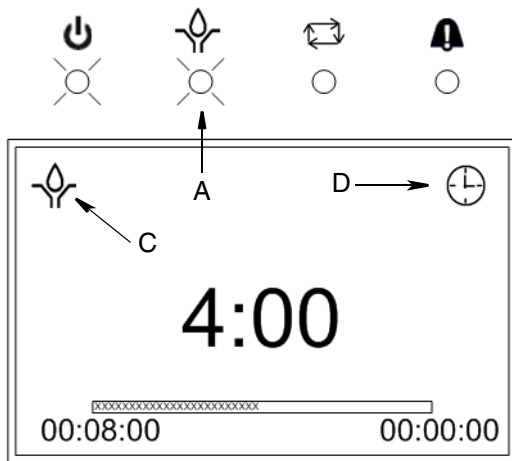


FIG. 56

If the Pump On sequence has been programmed to be ended by TIME:

- The GLC 4400 pump output relay activates (J7-3) and will stay on until the time expires. (see Setup Menus, Pump On, page 18).
- The Pump On LED (A) remains on during this time.
- The Pump On (C) icon displays.

- The Timer icon (D) displays and indicates the Timer Mode.

Pump On Ended with Pressure

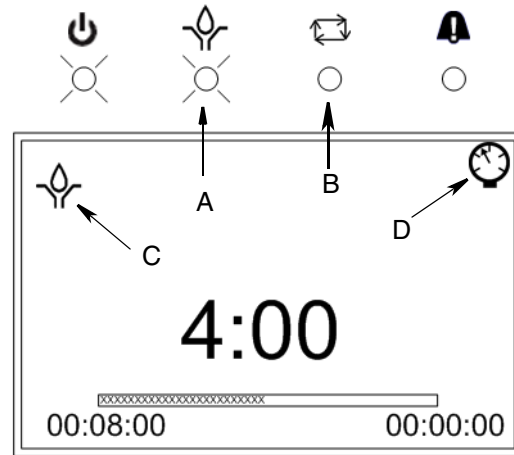


FIG. 57

If the Pump On sequence has been programmed to end by a pressure switch:

- The GLC 4400 pump output relay activates (J7-3) and will stay on until a switch closure is received (J6-3) (see Setup Menus, Pump On, page 19).
- The Pump On LED (A) remains on during this time.
- The Pump On (C) icon displays.
- The Cycle LED (B) illuminates and Pressure Mode icon (D) displays to indicate the pressure switch.
- If the pressure switch closure is not received before time expires, an alarm occurs.

NOTE: If Pump On is ended by a pressure switch and no Power Up delay is selected, when power to the GLC 4400 is turned on, the GLC 4400 starts at the beginning of the Pump On time instead of resuming the Pump On time where it left off.

Pump On Ended with Cycle Switch Activation

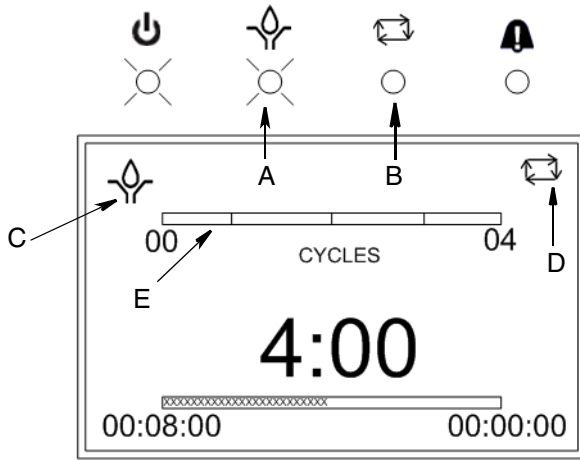


FIG. 58

If the Pump On sequence has been programmed to end by a Cycle Switch Activation:

- The GLC 4400 pump output relay activates (J7-3) and will stay on until the correct number of cycle switch closures is received (J6-3) (see Setup Menus, Cycle End Setup page 19).
- The Pump On LED (A) remains on during this time.
- The Pump On (C) icon displays.
- The Cycle LED (B) and Cycle Count Mode icon (D) display indicating the cycle switch is activated.
- The cycle indicator bar (E) displays a visual representation of the cycle switch closures received.
- If the set number of cycle switch closures is not received before time expires, an alarm occurs.

Pump Off Ended with Time

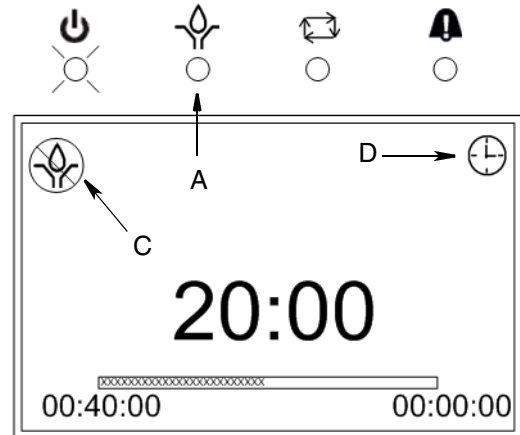


FIG. 59

If the Pump Off sequence has been programmed to be ended by TIME:

- The GLC 4400 pump output relay activates (J7-3) and will stay off until the time expires. (see Setup Menus, Pump Off, page 20).
- The Pump On LED (A) remains off during this time.
- The Pump Off icon (C) displays.
- The Timer Mode icon (D) displays and indicates the Timer Mode.

Pump Off Ended with Machine Counts

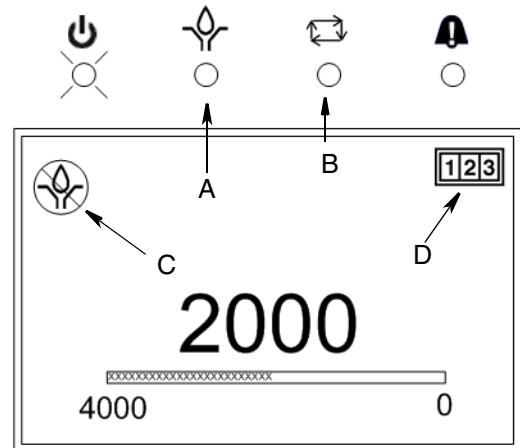


FIG. 60

If the Pump Off sequence has been programmed to be ended by MACHINE COUNTS:

- The GLC 4400 pump output relay activates (J7-3) and will stay off until the correct number of counts (J6-15) occur (see Setup Menus, Pump Off, page 20).
- The Pump On LED (A) remains off during this time.
- The Pump Off icon (C) displays.
- The Cycle LED (B) and Machine Count icon (D) display and indicate the Machine Count Switch activation.

Pump Off Ended with Machine Counts; Max Time Entered

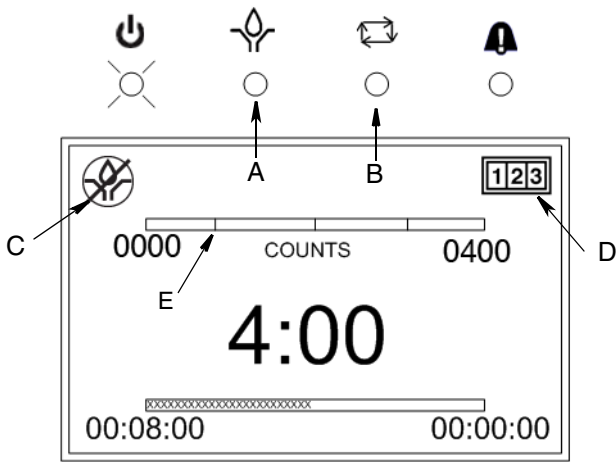


FIG. 61

If the Pump Off sequence has been programmed to be ended by MACHINE COUNTS with a maximum time:

- The GLC 4400 pump output relay activates (J7-3) and will stay off until the correct number of counts (J6-15) occur (see Setup Menus, Pump Off, page 20).
- The Pump On LED (A) remains off during this time.
- The Pump Off icon (C) displays.
- The Cycle LED (B) and Machine Count icon (D) display and indicate the Machine Count Switch activation.
- The counts indicator bar (E) displays a visual representation of the machine counts received.
- If the set number of machine counts is not received before time expires, an alarm occurs.

Alarms Screen

When a cycle alarm event occurs the Alarm Screen, shown in FIG. 62 displays.

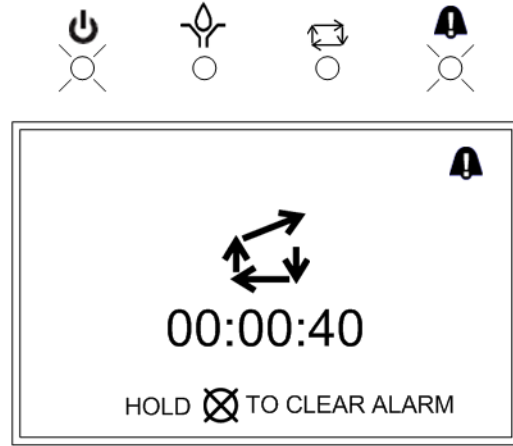


FIG. 62

To clear an alarm, hold down the Clear Key on the display Keypad (see page 3).

The following is a list of other alarm events that may display.



Low Level Alarm. Icon appears on display screen. Indicates the lubrication fluid level is low.



Pressure mode error. Icon displays on alarm screen to signal the allotted time ran out before the pressure switch was tripped.



Machine count error. When icon displays on alarm screen, indicates the set number of machine counts was not received before time expired. This would trigger an alarm event.



Cycle switch input error. Icon displays in center of Alarm screen to indicate the allotted time ran out before the programmed number of cycle switch activations was received.

Troubleshooting

Description	Problem	Solution
Timer fails to activate solenoid	No power supplied to solenoid	Power light off: Timer is not receiving power. Verify connections and verify power supply.
		Power light on: Verify solenoid connections
	Solenoid faulty	Replace solenoid
	Timer faulty	Replace timer
Pressure switch fails to shut down system	Low level or other alarm	Refill reservoir
	Pressure switch incorrectly wired	Verify proper connections
	Pressure switch faulty	Replace pressure switch
	Timer faulty	Replace timer

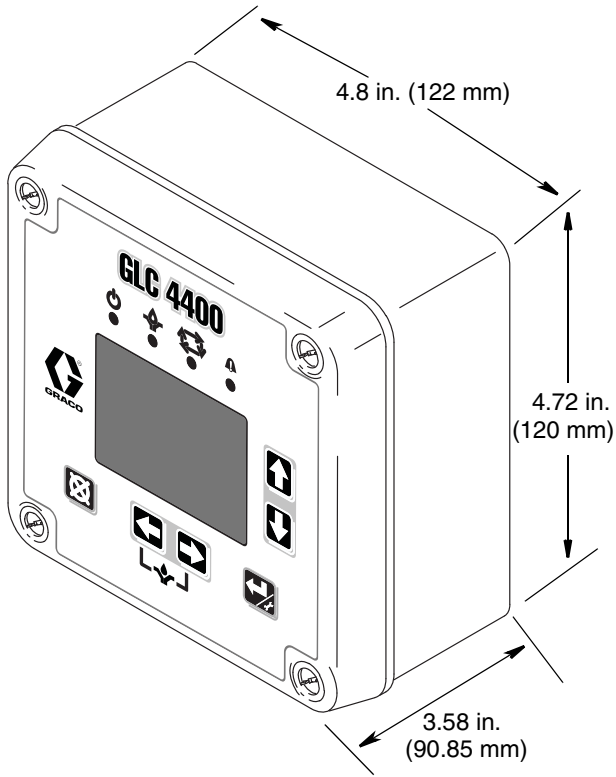
Program Settings

Description	Modes of Operation
	Maximum / Minimum and Additional Comments
TIMER Setup, page 18	HH:MM:SS (00:00:01 - 99:59:59)
PRESSURE Setup, page 19	HH:MM:SS (00:00:01 - 99:59:59)
CYCLE END Setup, page 19	HH:MM:SS (00:00:01 - 99:59:59)
CYCLE MODE Selection, page 20	Cycles = 01 - 99
PUMP ON Setup, page 18	Time, Pressure or Cycles
	Pump ON Time: HH:MM:SS (00:00:01 - 99:59:59)
	Cycles: 01 - 99 (only used when mode of operation = cycles)
PUMP OFF Setup, page 20	Time, Count or Both
	Pump OFF Time: HH:MM:SS. (00:00:01 - 99:59:59)
	Count: 01 - 9999
POWER UP Setup, page 22	MM:SS (00:01 - 59:59)
PULSED Output (pump), page 24	Maximum Time OFF and Time ON: SS (01-99)
PIN Number Setup, page 25	ON / OFF
	0000 - 9999
QUICK CYCLE SCREEN Setup, page 26	Cycles = 01 - 99
	Time ON and Time OFF: SS (01-99)
	Execute: YES / NO
PRELUBE on Power Up, page 30	YES / NO
	Delay: YES / NO
	TIME: MM:SS (00:01 - 59:59)

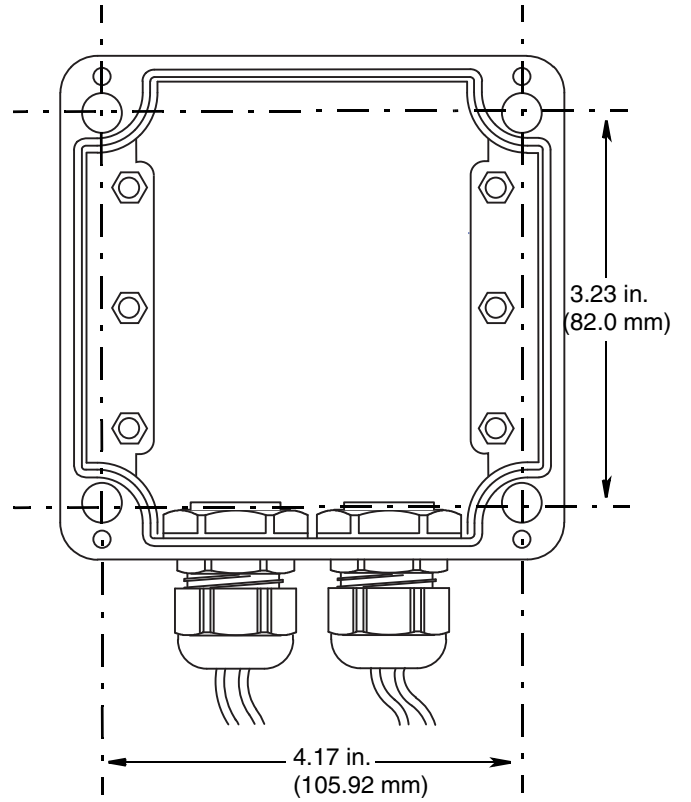
Technical Data

Input Contact	
Power Source DC - model 24B591	9 - 30 VDC
Power Source AC - model 24B596	100 VAC to 240 VAC - 50/60 Hz
Power consumption	24 Watts
Cycle Pressure Control Input (optional)	Normally open pressure or cycle switch
Machine Count Control Input (optional)	Machine count control switch
Lubrication level (optional)	Normally open level switch, closes upon low level
Remote Manual Run Input	Normally open remote manual run switch
Outputs	
Pump control	Pump Control Voltage = Power Source
Voltage	Power Source
Max Switching Voltage	250 VAC, 100 VDC
Max Switching Current	10 A (AC), 5A (DC)
Minimum Switching Capacity	100 mA @ 5 VDC
Low Level Alarm, normally open (optional)	
Voltage	Power Source
Max Switching Voltage	250 VAC, 30 VDC
Max Switching Current	5A (AC), 5A (DC)
Minimum Switching Capacity	100 mA @ 5 VDC
Auxiliary Alarm, normally open (optional)	
Voltage	Power Source
Max Switching Voltage	250 VAC, 30 VDC
Max Switching Current	5A (AC), 5A (DC)
Minimum Switching Capacity	100 mA @5 VDC
Status OK, normally open (optional)	Voltage-free Contact
Voltage	Power Source
Max Switching Voltage	250 VAC, 100 VDC
Max Switching Current	10 A (AC), 5A (DC)
Minimum Switching Capacity	100 mA @ 5 VDC
Protection grade	IP69K
Enclosure Material	Fiberglass reinforced polyester
Membrane Material	Polyester
Bushing	Ethylene Propylene Diene Monomer Rubber (EDPM)
Operating temperature range	- 40°F to 145°F (- 40°C to 63°C)
Storage Temperature	- 13°F to 145°F (- 25°C to 63°C)

Dimensions



Mounting Hole Layout



Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

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Graco Information

For the latest information about Graco products, visit www.graco.com.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6928 **or Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
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For patent information, see www.graco.com/patents.

Original instructions. This manual contains English. MM 313855

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